

**Montana Board of Research and Commercialization Technology
Board Meeting
502 South 19th, Bozeman, Montana
May 19 & 20, 2009**

Board Members Attending:

John Youngberg, Chairman
Marty Connell
Jim Davison
Todd Graetz
Paul Tuss

Board Member Absent:

Michael Dolson

Others Attending:

Dave Desch, Executive Director
Jane Todd, Administrative Specialist

I. Call to Order

Chairman John Youngberg called the meeting to order at 9:00 a.m.

II. Approval of Minutes

Chairman Youngberg asked for comments regarding the Minutes of the March 16, 2009, Board Meeting. There were no comments and Marty Connell moved to approve the Minutes. Seconded by Jim Davison, the Minutes were approved as presented.

III. Discuss Results of 2009 Legislature

Dave Desch presented the results of the recent legislative session and their impact on the MBRCT program.

- HB 123 extended the sunset to 2019 and reduced funding by 65% from \$3,650,000 to \$1,275,000 for Fiscal Years 2011, 2012 and 2013. The funding will revert back to \$3,650,000 July 1, 2013.
- HB 583 transfers \$250,000 from the FY2010 and FY2011 appropriations to the general fund for funding Montana Food and Agricultural Development Centers. The money will be allocated in accordance with MCA 90-3-103(4), which is the 20% production requirement in the MBRCT enabling statute.
- These decisions present challenges in the way the program funds projects, i.e. if the Board funds two-year projects in the current funding cycle, there may not be available funds for the next round of funding in March 2010. The Board could decide not to let a RFP next year, could fund fewer projects this year and bank some money (an option for which there is precedent), or fund projects for only one year.

The Board engaged in a discussion regarding the current funding situation. Some concerns raised included:

- The obstacles in getting back the \$3,650,000 appropriation in the next legislative session are considerable.
- Not letting an annual RFP is not a desirable option.
- The program has leveraged over \$200 million. The smaller the funding amount, the smaller the return-on-investment.
- Legislators and leaders do not seem to understand the importance of the program and stakeholders have not adequately defended it against competition for limited state funds.
- The program is extremely effective because it operates without layers of bureaucracy, brings new money into the state and has established a track record of commercializing new products and services.

It was the consensus of the Board that two-year projects will still be funded.

IV. Review and discussion of proposals submitted March 2, 2009

The Board discussed the procedure for reviewing proposals and the number of proposals to be reviewed. The Board then discussed the following projects and it was decided to put these in a “hold” category for the time being:

#10-13 Advanced Concrete Production in Sustainable Infrastructure Systems

Michael Berry, Montana State University, Bozeman

\$97,401

#10-45 Furniture Joint System

Jared Joyce, Jared Joyce, Inc., Bozeman

\$200,000

#10-46 Digital Contact Case

Jared Joyce, Jared Joyce, Inc., Bozeman

\$200,000

#10-47 ERGO-CB (Ergonomic Clipboard)

Jared Joyce, Jared Joyce, Inc., Bozeman

\$200,000

#10-48 Dual Account Card

Jared Joyce, Jared Joyce, Inc., Bozeman

\$200,000

#10-49 Furniture Joint System

Jared Joyce, Jared Joyce, Inc., Bozeman

\$200,000

#10-50 Furniture Joint System - Patent Protection

Jared Joyce, Jared Joyce, Inc., Bozeman

\$200,000

#10-29 Manufacturing Process to Produce EverLog Siding™
Stewart Hansen, EverLog Systems, Missoula
\$200,000

#10-68 Does the Cluffy Wedge® Increase Jump Height in Athletes?
James Clough, Cluffy Biomedical, LLC, Great Falls
\$45,861

#10-74 The Digital Golf Coach: Setting the Future for Automated Physical Motion
Analysis
David Optiz, Physical Motion Research Institute, LLC, Missoula
\$264,000

#10-36 Synergy Aircraft Project
John McGinnis, McSquared Design USA, LLC, Kalispell
\$209,880

#10-65 Evaluation of Swan Valley Medical's New Transurethral Suprapubic endo-
Cystomy Instrument (T-SPeC™)
Wayne Sinclair, Swan Valley Medical Inc., Bozeman
\$822,500

The Board discussed the following proposals in detail:

#10-01 Liquid Nitrogen Refrigerated Trailer Cooling System
Erik Larsen, MiraLogix, Bozeman
\$148,500

The Board liked this project because:

- Novel approach for using liquid nitrogen to cool refrigeration trucks
- Superior technology to what is currently available
- Existing market and demand
- High commercialization potential

The Board expressed concerns as follows:

- Questioned commercialization timeline
- High salary budget
- Need to address how units will be refilled, how long a tank will last
- Questions about financial capacity of parent company
- Inadequate capital, underfinanced?

#10-02 Affordable Windpower for Farms and Ranches
Wade Wolf, Wind Innovations LLC, Bozeman
\$149,972

The Board liked this project because:

- Receipt of SBIR Phase I and II for technology development
- Patent pending
- Novel location for gear box

The Board expressed concerns as follows:

- Exaggerated market assumptions
- Questioned travel, administrative budgets

#10-03 Immunotherapies for Autoimmune Disease
David Pascual, Montana State University, Bozeman
\$300,000

The Board liked this project because:

- Great project in terms of helping Multiple Sclerosis
- Good peer review
- PI highly regarded

The Board expressed concerns as follows:

- Considerable budget given limited available funding
- Long-term commercialization

#10-04 Absolute Calibration of a CW-FM LADAR Length Metrology System
Zeb Barber, Montana State University
\$138,000

The Board liked this project because:

- Improving upon existing technology
- High commercialization potential
- Expansion of optics/manufacturing industries
- Collaboration with local optics company
- Short-term, medium-risk

The Board expressed concern as follows:

- Questions about contracted services

#10-05 A High Resolution Adaptive Beamforming Antenna for sensor Networks
Yikun Huang, Montana State University, Bozeman
\$273,919

The Board liked this project because:

- Military applications in rural areas

The Board expressed concerns as follows:

- Not particularly novel anymore
- Missed niche and opportunity for commercialization

#10-06 Performance Improvement of Materials for Energy Conversion
Galina Malovichko, Montana State University, Bozeman
\$180,000

The Board liked this project because:

- Well-written proposal that met statutory criteria
- Limited risk
- Interesting project

The Board expressed concerns as follows:

- Medium commercialization potential
- Lack of peer review

#10-07 Knowledge-Based Energy Management Systems for Microgrids with Multiple Renewable and Non-Renewable Distributed General Sources
M. Hashem Nehrir, Montana State University, Bozeman
\$182,519

The Board liked this project because:

- Addresses paradigm shift in terms of financial realities

The Board expressed concern as follows:

- Technology being duplicated by a number of companies

#10-08 Use of Variety Blends to Provide an Economic Boost to Wheat-Growing Regions of Montana
Jamie Sherman, Montana State University, Bozeman
\$200,000

The Board liked this project because:

- Good project with tremendous potential to stimulate Montana.
- Important work

The Board expressed the opinion that:

- Receipt of stimulus money trumps the need for MBRCT funds.

#10-09 Commercialization of a Remotely Deployed Thermal Imager for Wildfire and Agricultural Management
Joseph Shaw, Montana State University, Bozeman
\$135,935

The Board showed no particular interest in this project.

The Board expressed concerns as follows:

- Questionable sales potential

- Issues raised in conversations with firefighters included similar, better technology already available
- Formatting guidelines not followed, information difficult to find

#10-10 A Novel Snow Depth Sensor for Snow Structure and Water Equivalence Measurements
Richard Wolff, Montana State University, Bozeman
\$158,370

The Board liked this project because:

- High credibility of PI

The Board expressed concerns as follows:

- Competing for limited funding against better proposals
- Proposal not sufficiently updated from previous applications
- Similar technology already exists

#10-11 Development of a Commercial Production System for Protein Cage Nanoparticles (PCNs) for Immunotherapeutic Applications
Mark Young, Montana State University, Bozeman
\$80,000

The Board liked this project because:

- High credibility of PI
- Potential to revolutionize treatment of cancer
- Short-term commercialization
- Better than the competition
- Impressive experience and qualifications of team

The Board expressed concerns as follows:

- Inadequate funding request
- Questioned direct benefit to Montana

#10-12 Evaluation of Safflower and Other Specialty Oilseed Crops for Biodiesel/Industrial/Food/Livestock Feed and Value-Added Products in Montana
Jerald Bergman, Montana State University, Bozeman/Sidney
\$75,000

The Board liked this project because:

- Credibility of PI

The Board expressed concerns as follows:

- Proposal generic and vague
- Not a viable project for MBRCT program
- Long-term survival of safflower

#10-14 Toward a Better Understanding of the Potential for Barley Straw as a Biofuel Feedstock: A Comprehensive Survey for Fructan Metabolism and Expression Studies of Candidate Genes in Barley

Victoria Carollo Blake, Montana State University, Bozeman

\$47,346

The Board liked this project because:

- Cellulosic ethanol more viable than other types of ethanol sources in the long term

The Board expressed concern as follows:

- Omissions in Executive Summary

#10-15 Multiple Strategy Winter Wheat Cultivar Development for Montana

Phil Bruckner, Montana State University, Bozeman

\$132,000

The Board liked this project because:

- Potential to contribute to Montana's economy
- Proven researchers with track record in subject area
- Adding value to product already being grown
- Application complete

The Board expressed no particular concerns regarding this project.

#10-16 Development of New Antibacterial Dendrimers

Mary Cloninger, Montana State University, Bozeman

\$64,200

The Board liked this project because:

- Significant potential for success
- Multiple applications for the technology
- Reasonable budget
- Support of Navy
- Relevant work in respect to human resistance to infections
- Novel, cutting-edge work

The Board expressed no particular concerns regarding the project.

#10-17 High-Performance Spectral Sensor Crystals for Photonic Signal Processing Applications

Rufus Cone, Montana State University, Bozeman

\$124,542

The Board liked this project because:

- Potential for success

- Excellent peer reviews
- In-depth commercialization plan

The Board expressed concern as follows:

- Private money allows for success without MBRCT funding given limited dollars available

#10-18 An Improved Approach to Discovering Biomarkers for Health and Disease
Diagnosis in the Peptidome Using Zdyes

Edward Dratz, Montana State University, Bozeman

\$150,000

The Board liked this project because:

- Interesting technology
- Reputable researcher

The Board expressed concerns as follows:

- Commercialization risk
- Multiple previously funded projects

#10-19 Functional Analysis of Genes Controlling Malting Barley Grain Protein
Concentration

Andreas Fischer, Montana State University, Bozeman

\$201,930

The Board showed no particular interest in this project.

The Board expressed concerns as follows:

- Funded before and nothing particularly new in this proposal
- Better production agriculture applications given the competitive funding environment

#10-20 Advancing Malting and Feed Quality in Barley

Mike Giroux, Montana State University, Bozeman

\$70,800

The Board showed no particular interest in this project.

The Board expressed concerns as follows:

- Funded before and nothing particularly new in this proposal
- Will receive funding without MBRCT
- Better production agriculture applications given the competitive funding environment

#10-21 Development of a System to Harvest Drinking Water from Ambient Air Using
Solar Power

M. Ruhul Amin, Montana State University, Bozeman
\$256,483

The Board showed no particular interest in the project.

The Board expressed concerns as follows:

- Significant budget request
- Subcontract to out-of-state companies comprises almost half the budget.
- Benefit to Montana

#10-22 Synthesis and Preclinical Evaluation of Two-Photon-Targeted Photodynamic Therapy Triads for Companion Animal Cancers
Charles Spangler, MPA Technologies, Inc., Bozeman
\$45,000

The Board liked this project because:

- Animal research provides information for human applications

The Board expressed concerns as follows:

- Difficulty justifying research benefitting animals in the current environment
- Multiple projects have received previous funding

#10-23 Enhancement of Applied Research in Biomedicine
Richard Bridges, University of Montana, Missoula

The Board liked this project because:

- MBRCT success story
- Exemplifies what funding research infrastructure is all about
- Avid supporter of MBRCT program
- Significant return on investment in terms of follow-on funding from NIH, spin-off companies, licensing of technologies

A Board member expressed concerns as follows:

- Long-term perspective in terms of basic research
- Commercialization potential

#10-24 Standardized Heavy Duty Tow Vehicle
Rob Cook, Intercontinental Truck Body, Conrad
\$503,386

The Board liked this project because:

- Commercialization potential
- Location in Montana
- Likelihood of project success

The Board expressed concerns as follows:

- Significant budget request given limited available funding
- Not a good fit with MBRCT program
- Beneficiary of significant funding from other state agencies
- Not particularly innovative
- No budget justification, no peer review

#10-25 Development and Commercialization of Measurement and Verification Technologies for Use in Soil-Based Cropland Carbon Sequestration Crediting
Ted Dodge, National Carbon Offset Coalition, Butte
\$186,008

The Board liked this project because:

- Interesting idea if the team has the ability to do this at a macro level and can do it right
- Need exists for verification technology

The Board expressed concerns as follows:

- Distrust of idea of carbon credits and trading and cap and trade
- Sale of carbon credits as source of matching funds
- Viability of carbon markets
- Technical feasibility

The Board requested a presentation of this proposal.

#10-26 Novel Controlled Release Fertilizer Materials Derived from Renewable and Environmentally Degradable Polymers
Donald Kiely, Montana Renewables, Inc., Missoula
\$150,125

The Board liked this project because:

- Well presented proposal
- Exciting from a production agriculture standpoint
- Significant commercialization potential
- Potential to address future regulations related to fertilizers

The Board expressed concerns as follows:

- Not possible if technology adds significant to the cost
- No peer review

The Board requested a presentation of this proposal.

#10-27 Hyperspectral Sensor for Large-Area Monitoring of Carbon-Dioxide Reservoirs and Pipelines
Rand Swanson, Resonon Inc., Bozeman
\$149,985

The Board liked this project because:

- May be important to detect leaks
- Company investment in project

The Board expressed concerns as follows:

- Underground carbon storage concept in general
- High percentage of budget for indirect costs
- Montana's limited amount of space for this application
- Is this a significant future problem?

#10-28 Clinical Trials of a Lypolytic Compound

Jeff Golini, All American Pharmaceutical Inc., Billings

\$170,000

[Marty Connell recused himself from voting on this project due to potential conflict of interest.]

The Board liked this project because:

- Facility, employees, financially successful
- PI's knowledge of product and market
- Use of a previous MBRCT project conducted by another PI to lower cholesterol through lipolitic effect
- Strong matching funds
- Commercialization potential

The Board expressed concerns as follows:

- Research or marketing?
- Doesn't need MBRCT funding as much as MBRCT approval
- Unorthodox

The Board requested a presentation of this proposal.

#10-30 Structured Nanophase Catalysts

Yuval Avniel, EIP International, Missoula

\$110,930

The Board liked this project because:

- Could be a step in the right direction toward clean coal technology
- Receipt of NSF STTR grants

The Board expressed concerns as follows:

- Energy balance seems high
- Feasibility of technology successfully working
- Lack of peer review makes it difficult to determine feasibility

#10-31 Advanced Compact Laser for Remote Gas Sensing
Peter Roos, Bridger Photonics, Bozeman
\$156,231

The Board liked this project because:

- Revision of previously submitted project to include CO₂ detection
- Interesting project that may address new auto standards to decrease emissions
- Potential market to look for automobile exhaust emissions
- Receipt of NSF STTR grants

The Board expressed concern as follows:

- Significant Facilities & Administrative costs include payroll benefits

#10-32 A New Agrichemical Biosensor
Charles Thompson, ATERIS Technologies LLC, Missoula
\$334,000

The Board liked this project because:

- Interesting technology
- Innovative

The Board expressed concerns as follows:

- Expensive project
- Is there a market?
- Detects organophosphates, but not levels

#10-33 A New Proposal for a High-Speed Dual String Drilling System
Robert Able, RA Mechanical Design, Bozeman
\$249,300

The Board liked this project because:

- Local Belgrade company
- Potential impact on oil and gas industry
- Innovative

The Board expressed concerns as follows:

- Lack of marketing plan
- Peer review points out wear factor of bits
- Expensive piece of equipment included in budget

#10-34 Manufacture of Wavefront Guided Progressive Multifocal Contact Lens
Stephen Dunn, WaveSource Inc., Whitefish
\$108,843

The Board liked this project because:

- Potential for success, employment, contribute to Montana's economy

- Collaboration with respected industrial leader
- Potential for niche industry in Montana

The Board expressed concern as follows:

- Lack of information as far as competition

The Board requested a presentation of this proposal.

#10-35 Fluorescent Reporters for Cre Recombinase: New Tools for Manipulating Animal Genomes to Study the Genetic Factors of Disease

Anne Marie Quinn, Montana Molecular LLC, Bozeman

\$99,809

The Board liked this project because:

- Short-time to market with near-term impact
- Company monetary investment in project
- Benefit in seeing this project through to fruition
- Building fluorescence infrastructure at MSU at small companies attached to it
- Receipt of NIH funding

The Board expressed no particular concerns regarding this project.

#10-37 New Applications of Silica Polyamine Composites and Product Improvement: Solar Driven Hydrogen Production Coupled with Coal Gasification and Microbial and Viral Capture

Edward Rosenberg, University of Montana, Missoula

\$290,040

The Board liked this project because:

- PI does a good job
- Technology transfer at UM
- Potential for commercialization
- Previous successes

The Board expressed concerns as follows:

- Majority shareholder is an Australian company.
- Significant funding request
- Potential for manufacturing in Montana
- Potential for use in Montana

#10-38 Study of How Morphology and Physiology of Native Wildflower Seed Affects its Harvestability in Particular by the Arbuckle Native Seedster

Lee Arbuckle, Native Seedsters Inc., Billings

\$87,722

The Board liked this project because:

- Medium-risk
- Potential for successful development of technology
- Relatively short-term
- Good potential market in wildflowers

The Board expressed concerns as follows:

- High Facilities & Administrative costs
- Commercialization plan does not address pricing and competition considerations

#10-39 The Grid DEFENDER

Jim Jenner, Grid Defender, Inc., Phillipsburg
\$135,200

The Board liked this project because:

- Well-written proposal
- Patented technology
- Market may be in areas where ice is more of a problem than in Montana

The Board expressed concerns as follows:

- Lack of anchor customer, significant commitments from industry
- Is this realistic from a practical standpoint?

#10-40 Nutrient Management for the Optimization of Biofuels Production in a
Proprietary CTW Energy Algal Photobioreactor
Joseph Menicucci, Jr., CTW Energy, Bozeman
\$241,398

The Board liked this project because:

- Unique process with potential
- Cutting-edge technology
- Future of biodiesel appears to be algae
- Medium to high risk

The Board expressed no particular concerns regarding this project.

#10-41 Grupthink API for Social Networks
Steven Sundheim, Grupthink, Inc., Missoula
\$255,000

The Board liked this project because:

- Principals are well established and experienced in the industry
- Major anchor tenant is General Mills

The Board expressed concerns as follows:

- Matching funds

- Need better understanding of product
- May be better to give them less money
- No budget justification

The Board requested a presentation of this proposal.

#10-42 The Use of Native, Salt-Tolerant Perennial Plant Species for Remediation on Saline Impacted Lands: An Integrated System
Elizabeth Scholl, Ecolibrium Inc., Bozeman
\$388,201

The Board liked this project because:

- Addresses two issues – improving ag production on salt-damage land, harvesting perennial oilseed plants for biofuel industry

The Board expressed concerns as follows:

- Significant funding request including management and subcontracts
- No budget justification
- Extent to which saline is currently a significant problem for Montana
- Potential for getting crops to grow on salt-damaged land

#10-43 Sonographic Analysis for Rapid Detection of Varroa Mites and Other Pathologies Without Opening the Beehive
Robert Seccomb, BeeAlert Technology, Inc., Missoula
\$130,000

The Board liked this project because:

- Potential for commercialization
- Principal Investigators are the innovators of the technology

The Board expressed concerns as follows:

- Matching funds confusing
- Will the device be manufactured in Montana?

#10-44 Geochemical Characterization of Montana Coal
David Mogk, Montana State University, Bozeman
\$177,369

The Board showed no particular interest in this project.

The Board expressed concerns as follows:

- Funding a thesis – solution looking for a problem
- Is this the responsibility of coal companies?

V. Adjournment

The meeting ended at 4:53 p.m. and will resume at 8:30 a.m. on May 20, 2009.

Montana Board of Research and Commercialization Technology
Board Meeting
502 South 19th, Bozeman, Montana
May 20, 2009

Board Members Attending:

John Youngberg, Chairman
Marty Connell
Jim Davison
Todd Graetz
Paul Tuss

Board Member Not Attending:

Michael Dolson

Others Attending:

Dave Desch, Executive Director
Jane Todd, Administrative Specialist

I. Call to Order

Chairman John Youngberg called the meeting to order at 8:30 a.m.

II. Continue Review and Discussion of Proposals Submitted March 2nd

#10-51 A New Cost-Effective, Non-Invasive, Geophysical Methodology for Exploration and Development of Geothermal Resources in Montana

Leif Cox, Montana Tech, Butte

\$95,630

The Board liked this project because:

- Follows with legislation passed in the recent legislative session as far as who owns the water and who owns the geothermal.
- Significant potential for commercialization
- Reasonable funding request
- Future exists for tapping geothermal resources
- Montana is rich in geothermal

The Board expressed concern as follows:

- Travel request

#10-52 Generation of Electric Power from Cleaned Coal, Natural Gas or Renewable Biological Sources at Extraordinary Efficiency

Craig Wilkins, Glacier Clean Technology, Inc., Kalispell

\$250,000

The Board liked this project because it meets the clean coal/renewable resource criteria.

The Board expressed concerns as follows:

- Experience of team to adapt to this highly competitive field
- High risk

#10-53 Rechargeable Zinc/Air Battery Research
David Wilkins, Zinc Air, Inc., Kalispell
\$200,000

The Board liked this project because:

- Interesting technology

The Board expressed concerns as follows:

- Limited knowledge of the company
- Originated in Bay area where there are a lot of companies, money and venture people. How did they get linked up to Kalispell people?
- Subcontract to Berkley
- Do these people have the experience necessary to commercialize the technology?

#10-54 High Efficiency Hybrid Solar Power System—Producing Electricity and Hot Water Simultaneously
Michael Utter, Rural Community Innovations, Bozeman
\$150,000

The Board liked this project because:

- Intriguing use of interesting technology
- Well-written proposal
- Good resumes

The Board expressed concern as follows:

- May be better proposals given the competitive funding environment.

#10-55 Conversion of Secondary Metal Waste Streams into Strategic Metal Resources of Uranium Mines
Richard Hammen, IntelliMet LLC, Missoula
\$133,112

The Board liked this project because:

- Receipt of previous federal grants
- Addresses the real problem of extracting toxic metals from mines
- PI's reputation as a good scientist for doing the work and getting good results

The Board expressed concern as follows:

- Commercialization potential

#10-56 Next Generation Solar Cell Technology
Robert Hyatt, CuPV, LLC, Butte
\$217,850

The Board liked this project because:

- Proposal reads well

The Board expressed concerns as follows:

- Significant funding request
- Budget line items, travel, equipment
- Lack of budget justification

The Board requested a presentation for this proposal.

#10-57 Copper Sintering Technology for Printed Electronics
Derril Steele, Polymeric Interconnect, Butte
\$195,000

The Board liked this project because:

- Efficient-sounding process
- Company investment

The Board expressed concerns as follows:

- Lack of commercialization partner
- Significant travel budget
- Lack of information regarding the company

#10-58 Carbon Sequestration for Enhanced Oil Recovery in Eastern Montana
Leo Heath, Montana Tech, Butte
\$257,332

The Board liked this project because:

- Likely the market will surface
- High-risk considering limited amount of available funding

The Board expressed concerns as follows:

- Challenges involved in facility siting and pipe line installation
- Economic feasibility
- Concern as to where this falls in the overall state plan

#10-59 Mobile Field Furnace Process for the Capture and Sequestration of CO₂
Rich Schuller, Plasma Energy Technologies, Inc., Butte
\$375,000

The Board liked this project because:

- One of stronger, better written energy proposals
- Good plan, team, mix of other people's money
- Use of visuals highly appreciated by Board

The Board expressed concern as follows:

- Budget considerations

#10-60 Engine Control Unit

James Vito, EngineLab Corporation, Missoula

\$135,000

The Board liked this project because:

- Fairly low risk
- Potential for commercialization

The Board expressed concerns as follows:

- Lack of information regarding company
- How can technical information be obtained without buying it from car companies?
- Is the information from the manufacturers proprietary or copyrighted?

#10-61 Combined Heat and Power (CHP) Utilizing Concentrating Solar Dish-Stirling

Stephen B. Antonioli, MSE Technology Applications, Inc., Butte

\$264,989

The Board liked this project because:

- Fits MSE business model
- MSE is a solid company in Montana

The Board expressed concerns as follows:

- Manufacture in Washington
- Stirling Energy Systems is doing the same thing on a large scale
- Significant funding request

#10-62 Novel Alkalithermophilic Degradation of Wheat Straw-Grass/Lignocellulosic Biomass Under Anoxic Conditions for Use as a Biofuel or Biofuel Additive

James Shirley, Montana State University, Bozeman

\$45,000

The Board liked this project because:

- Good project for the amount requested

The Board expressed concerns as follows:

- Not particularly innovative
- Challenges involved with transporting straw or hauling wood
- Dependent on price of fuel

#10-63 Metallic Nano Particle Filter to Remove Mercury from Coal Fired Power Plant
Flue Gas

Kumar Ganesan, Montana Tech, Butte

\$90,499

The Board liked this project because:

- Improvement on a filter technology developed under a previous project
- Potential for commercialization
- Fairly low risk
- Meets statutory requirements regarding clean coal/renewal resource project
- Problem that needs to be solved
- Receipt of DOE funding

The Board expressed no particular concerns regarding this project.

#10-64 Ultrasonographic Evaluation of New Transurethral Suprapubic endo Cystomy
Instrument (T-SPeC™) for Less Invasive Insertion of Catheters into the Urinary Bladder
Wayne Sinclair, Swan Valley Medical Inc., Bozeman

\$102,644

The Board liked this project because:

- High commercialization potential
- Potential to lower medical costs

The Board expressed concerns as follows:

- Duplication of existing treatment
- Manufacture in Montana?
- Difficulties involved in marketing medical devices

#10-66 Innovative Methods for Improving Waveguide Package Performance

Todd Hawthorne, AdvR, Inc., Bozeman

\$125,220

The Board liked this project because:

- High probability of commercial success
- Solid company, dependable for doing the work and successfully commercializing the project
- Successful completion of previous MBRCT projects
- Incremental advances on proven technology
- Good peer reviews

The Board expressed concerns as follows:

- Facilities & Administration costs are high

#10-67 Development of a Field-Portable Biodetector
Timothy Troutman, Resodyn Corporation, Butte
\$379,532

The Board liked this project because:

- Interesting project for applied research and product development
- Proven company with good track record, integrity with MBRCT
- Supportive of MBRCT program
- Military application
- On-site water testing application

The Board expressed concerns as follows:

- Commercialization potential
- Significant funding request
- Budget includes significant Facilities & Administrative costs

#10-69 Clean Air Canister
Mary Meadows, 3J's Research & Development LLC, Kalispell
\$250,000

The Board showed no particular interest in this project.

The Board expressed concerns as follows:

- Budget includes purchase of forklift, travel to marketing seminars, significant Facilities & Administrative expense

The Board decided to put this project in the "Hold" category at this time.

#10-70 Nanoparticle Genetic Transformation System and Materials Failure Analysis
Capability for Montana
Rajendra Kasinath, Montana Tech, Butte
\$155,536

The Board liked this project because:

- Appears it may build up infrastructure in the state

The Board expressed concerns as follows:

- Is genetic work a strength of Montana Tech?
- Unclear what the deliverable is

#10-71 MADA SFRJ (Solid Fueled Ramjets) Technology Development and Testing
David Micheletti, Montana Aerospace Development, Butte
\$129,880

The Board liked this project because:

- Testing done at MADA facility in Butte and test area in Montana

- Very interesting project
- NASA or military market
- Quality PI

The Board expressed concerns as follows:

- Are others doing this?
- Commercialization in Montana

The Board requested a presentation for this proposal.

[Paul Tuss recused himself as he serves on the MADA Board of Directors.]

#10-72 Bio-Agtive™ Emission Technology: Turning Fuels into Fertilizer
Jessica Windy Boy, Montana State University Northern, Havre
\$119,420

The Board liked this project because:

- Takes initial research conducted in Canada to the next step of commercializing
- Simple technology to build
- Could be a win/win for not a lot of money
- Quality team with good reputation

The Board expressed concerns as follows:

- Confusion regarding scope of project
- Source of matching funds not clear
- Lack of justification for in-kind match/equipment
- How is pressure created around the pipe handled?
- What is the deliverable?

The Board requested a presentation for this proposal.

#10-73 Northwest BioRenew Project to Commercialize a Proprietary Process for
Producing Renewable Diesel Fuel from Biomass in Montana
Jerry Spencer, Northwest BioRenew, LLC, Helena
\$89,577

The Board liked this project because:

- Potential of fuel from biomass

The Board expressed concerns as follows:

- Challenge in balance of going from one energy source to another
- License agreement
- Travel portion of budget is high
- Matching funds not described
- Need for significant capital infusion
- Cutting-edge technology may be embraced by anyone

#10-75 Continuation of Collaborative Research on Innovative Fluorescence Lifetime Spectrometers

Gregory Gillispie, Fluorescence Innovations, Inc., Bozeman

\$200,000

The Board liked this project because:

- Collaboration between Bozeman laser and optic companies
- See project to fruition
- Company investment
- Excellent peer reviews
- Building center of excellence for fluorescence work at MSU

The Board expressed concern as follows:

- Indirect costs

#10-76 Measurement of Optical Output of High-Power Laser Diodes

Lawrence Johnson, ILX Lightwave, Bozeman

\$157,885

The Board liked this project because:

- Reputable Montana company with good track record
- Company investment in project
- Positive peer reviews
- Potentially significant market

The Board expressed concerns as follows:

- May not be truly unique or novel
- How serious is this measurement problem?
- Budget includes a large amount for equipment purchase, indirect costs high
- What is contracted services line item?

#10-77 Commercialization of Optical Analog Waveform Generation (OAWG) Hardware

Kristian Merkel, S2 Corporation, Bozeman

\$66,485

The Board showed no particular interest in this project.

The Board expressed concern as follows:

- Particular project not a good fit

#10-78 Commercial Introduction of Barley Protein Concentrate in Aquaculture Markets

Bob Kearns, Montana Microbial Products, Butte

\$118,900

The Board liked this project because:

- Addresses concentration of mercury in farm fish
- Value-added Montana product
- Considerable progress has been made over the years on this project.
- Significant matching funds
- Interest of farmers in this type of project

The Board expressed no particular concerns about the project.

#10-79 Development and NSF Third Party Testing and Certification of an Optimized Advanced Wastewater Treatment Technology Designed to Serve Montana's Most Environmentally Sensitive Locations
Thomas Kallenbach, Kallenbach, Inc., Three Forks
\$112,500

The Board showed no particular interest in this project.

The Board expressed concerns as follows:

- Budget omitted in electronic version of proposal
- Matching funds generated from future sales
- Appears to be funding request for expansion of an engineering firm
- Lack of budget justification

#10-80 Development of a Biomimicry-based Urban HydroCanopy Evaporative Roof System for Stormwater Management
Dayna Baumeister, Biomimicry Guild, LLC, Helena
\$200,000

The Board showed no particular interest in this project.

The Board expressed concerns as follows:

- End product unclear
- Significant financial risk

#10-81 Virus Detection and Screening for Honey Bees
David Wick, BVS, Inc., Stevensville
\$19,822

The Board liked this project because:

- Small funding request

The Board expressed concerns as follows:

- Science unclear

The Board discussed general issues regarding the program, including the degree to which presentations impact funding, the challenge of funding the most desirable projects while at the same time meeting statutory project mandates, the possibility of getting statutory

project mandates removed in the next legislative session, and funding options given reductions in future appropriations. Todd Graetz expressed appreciation for being part of the Board over the last two years.

Action: Marty Connell moved that those applicants identified during this Board meeting be invited to make presentations to the Board. Todd Graetz seconded the motion. No one opposed, the motion carried.

Next meetings:

June 23rd - all-day meeting in Bozeman for the purpose of hearing presentations

June 30th - 10am phone meeting to make final funding decisions

IV. Public Comment

There was no public comment.

V. Adjournment

Marty Connell moved to adjourn the meeting. Paul Tuss seconded the motion and Chairman Youngberg adjourned the meeting at 1:52 pm.

Respectfully submitted,

John Youngberg, Chairman